

## Document Log Item

Addressing	
<b>From</b>	<b>To</b>
George Robin/R9/USEPA/US	Adam Freedman/R9/USEPA/US@EPA Adam Freedman/R9/USEPA/US
<b>CC</b>	<b>BCC</b>
R9-Deep	
<b>Description</b> <span>Form Used: Memo</span>	
<b>Subject</b>	<b>Date/Time</b>
(Confidential)(Shell and Solano review)RE: DRC item for Sept. 8th agenda	09/04/2009 10:26 AM
<b># of Attachments</b>	<b>Total Bytes</b>
0	18,809
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Body

## Document Body

Adam,

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George

----- Forwarded by George Robin/R9/USEPA/US on 09/04/2009 08:48 AM -----

From: "Chan, Victor M." <VMChan@SolanoCounty.com>  
To: Adam Freedman/R9/USEPA/US@EPA  
Cc: George Robin/R9/USEPA/US@EPA, David Albright/R9/USEPA/US@EPA  
Date: 09/03/2009 04:34 PM  
Subject: RE: FW: DRC item for Sept. 8th agenda

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CONFIDENTIAL EMAIL. FOR YOUR EYES AND US EPA EYES ONLY

Adam

Safety and public trust is my prime directive. As a former nuclear engineer, I have learned that once there is an incident, it is extremely difficult to re-gain public trust. Therefore it is much easier to ensure that the incident does not occur in the first place and not be complacent about it. As an example, I just sent an email to Shell Oil because I noticed that the proposed surface facilities did not illustrate a safety check valve in Figure K-1 of their submittal. If there is a breach in any of the surface components, the safety check valve is designed to prevent backflow from the high pressure CO2 stored underground and avoid the accidental release of CO2. You may want to review Figure K-1 for yourself to understand this point. They probably have a check valve somewhere but I can seem to find it in their submittal.

I only focus on critical safety issues. Everything else is secondary. I just don't want this program follow the same path as the nuclear industry in which an incident occurred, public trust was lost, and then the entire industry changed overnight. As I stated below, I agree that an exhaustive seismic study is NOT necessary. I am agreeable to a preliminary seismic study mainly because if the public finds out that NO seismic study was done at all and there is a seismic incident, then there may be a backlash against the agencies who issued the permit. By having a preliminary seismic study done, I can deflect the backlash to Shell Oil for not doing it right.

Thanks for your input which I will take your email reply with me during my internal meeting in Solano County.

Victor M Chan, PE, BCEE  
Solano County Environmental Engineer [www.aaee.net](http://www.aaee.net)

**From:** Freedman.Adam@epamail.epa.gov [mailto:Freedman.Adam@epamail.epa.gov]

**Sent:** Thursday, September 03, 2009 3:37 PM

**To:** Chan, Victor M.

**Cc:** Robin.George@epamail.epa.gov; Albright.David@epamail.epa.gov

**Subject:** Re: FW: DRC item for Sept. 8th agenda

Victor,

Thank you for your email. At this point we do not have any comments concerning a required Vulnerability Evaluation with a Seismic Study. We feel that the size of the project does not merit an exhaustive seismic study, but rather, we hope to demonstrate the safety of the project using elements of the same approach as we would to even a large-scale project, namely that we will be requiring a determination of the Zone of Endangering Influence, including projections of the CO2 plume front, pressure front/influence, etc. over the life of the proposed project, and well beyond. We certainly will take into account the guidance provided by the VEF, keeping the potential risks in the back of our mind as we write the permit. We certainly appreciate that you focused on the potential lessons to be learned from the VEF document and we are trying internally to become familiar with some of the important concepts discussed within it. I'm pleased to hear that your review of the well design has made you feel more comfortable with the project. We are currently finishing up the administrative review of their application. Once that is complete, we will begin the technical review element of the permit review process. During the course of this review, I will look once more at the possibility of a required seismic study and other potential risk avoidances that may be implemented in the permit. I will keep you updated as to the progress of the permit and will cc you (and/or others at Solano County if you would like) on especially pertinent correspondence between EPA and Shell moving forward. Please let me know if you have any concerns or questions and I will be in touch as soon as possible. Thank you again for your close attention to detail--that is always appreciated.

Adam Freedman  
Environmental Scientist, Underground Injection Control  
U.S. Environmental Protection Agency, Region 9  
75 Hawthorne Street (WTR-9)  
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415.972.3845

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From: "Chan, Victor M." <VMChan@SolanoCounty.com>  
To: Adam Freedman/R9/USEPA/US@EPA  
Date: 09/03/2009 02:29 PM  
Subject: FW: DRC item for Sept. 8th agenda

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Adam

There will be an internal meeting on Sep 9<sup>th</sup> .

Do you have any comments on requiring Shell Oil to conduct a "Vulnerability Evaluation with a Seismic study"?

I did review the well design so I do feel a bit more comfortable with the design.

Vic

**From:** Chan, Victor M.

**Sent:** Thursday, September 03, 2009 1:46 PM

**To:** Profant, Michael E.; Leland, James H.; Laughlin, James W.; Kaltreider, Misty C.; Geisert, Matthew; Bell, Jeffery; Schmidtbauer, Terry; Cliche, David W.; Burton, Nicholas S.

**Cc:** Letterman, Kristine

**Subject:** RE: DRC item for Sept. 8th agenda

Michael Profant, Jeff Bell

If you look at Page 179 of the CD that you provided, Figure M-1 and M-2 was supposed to illustrate the well design. However, I could not find it. I need to review the well design prior to the meeting.

FYI. Based on my preliminary review, the 6,000 tons of CO<sub>2</sub> being planned for the pilot project translate to about 410,950 cu ft of CO<sub>2</sub> based on 29.2 lb/cu ft per page 208 of the CD.

The CO2 release from the bottom of Lake Nyos, Cameroon in 1986 which killed 1,700 people involved a release of 1 cubic kilometer of CO2. This translate to 35 billion cu ft of CO2 and therefore the order of magnitude of CO2 for the pilot project is 85,000 times less.

This means I feel more comfortable about having only a preliminary seismic study conducted rather than a full blown seismic analysis. We can talk about this during the DRC meeting but I would like to review the well design since the well design is critical to determine the risk for an accidental release of CO2.

Vic

**From:** Profant, Michael E.

**Sent:** Tuesday, September 01, 2009 2:37 PM

**To:** Profant, Michael E.; Leland, James H.; Laughlin, James W.; Kaltreider, Misty C.; Geisert, Matthew; Bell, Jeffery; Chan, Victor M.; Schmidtbauer, Terry; Cliche, David W.; Burton, Nicholas S.

**Cc:** Letterman, Kristine

**Subject:** RE: DRC item for Sept. 8th agenda

Sorry. This item is actually scheduled for the DRC agenda for Sept. 9<sup>th</sup>.

Sincerely,

Michael Profant

Assistant Planner

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**From:** Profant, Michael E.

**Sent:** Tuesday, September 01, 2009 11:55 AM



**To:** Leland, James H.; Laughlin, James W.; Kaltreider, Misty C.; Geisert, Matthew; Bell, Jeffery; Chan, Victor M.; Schmidtbauer, Terry; Cliche, David W.; Burton, Nicholas S.

**Cc:** Letterman, Kristine

**Subject:** DRC item for Sept. 8th agenda

All,

I have either personally delivered or placed in your box a CD containing the application made by Shell with the EPA for a Class V injection well for carbon sequestration in the Montezuma Hills.

We will discuss this item at the DRC meeting on September 8<sup>th</sup>. The County will require a use permit for this project and may require an amendment to the Zoning Ordinance.

Sincerely,

Michael Profant

Assistant Planner

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